

JOSEPH J. HAGGERTY, JR.
PRESIDENT

**INTERBORO
ASPHALT**
PAVING COMPANY INC.

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a
New York City

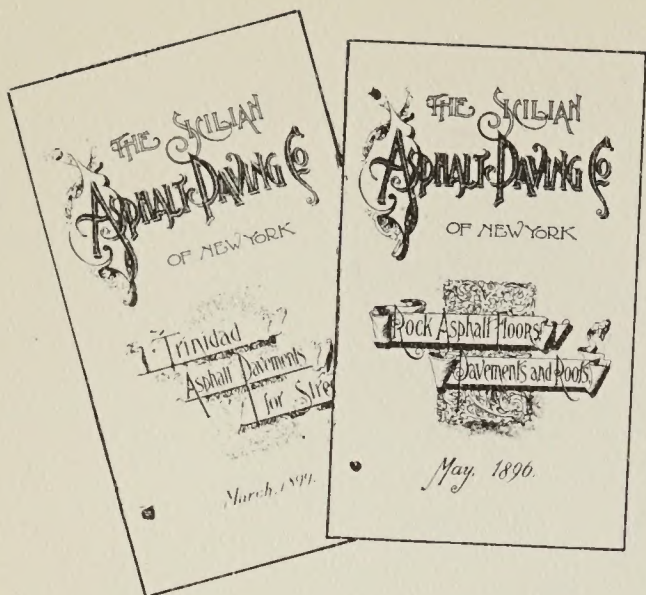
Asphalt Paving Manual

your ready reference

Prepared by:

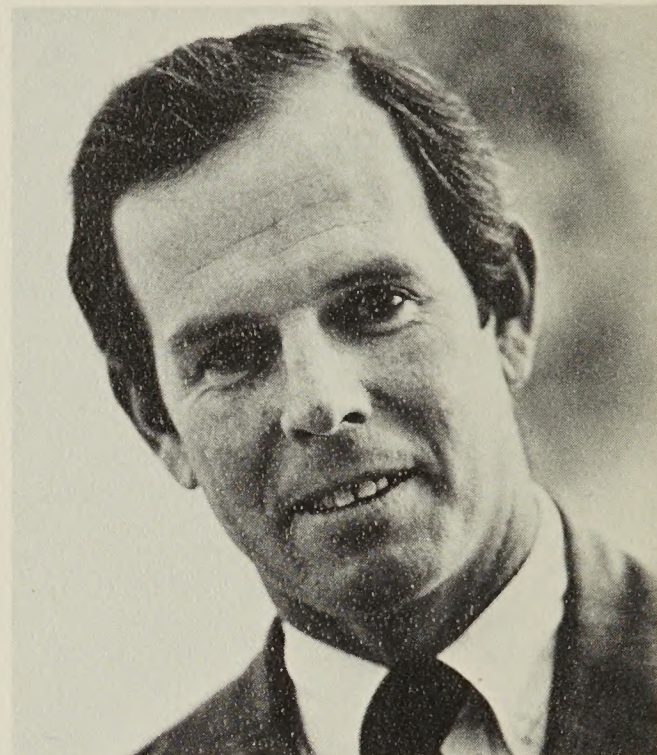
**INTERBORO
ASPHALT**
PAVING COMPANY INC.

99 Paidge Avenue, Brooklyn, New York 11222 • (212) 383-4100



INTERBORO ASPHALT PAVING COMPANY, INC.

*Formerly The Sicilian Asphalt Paving Company
"Paving the way to progress since before the turn of the century."*



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PRESIDENT

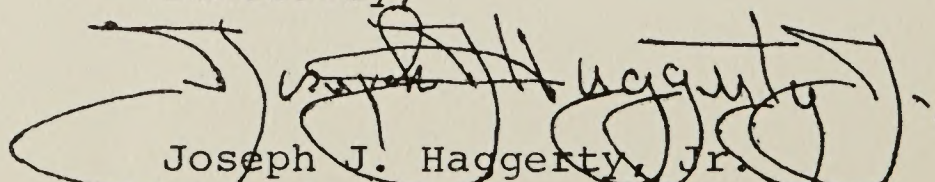
Dear Friend of Interboro,

We think this ready reference on paving in New York City will save you a lot of time searching around for widely scattered, often hard to find, (but necessary) information on the what, who and when of asphalt paving construction and repair.

By putting it altogether for you in one place like this we know you can save many hours of wasteful fact grubbing that we feel you could spend more profitably in your own special area of competence.

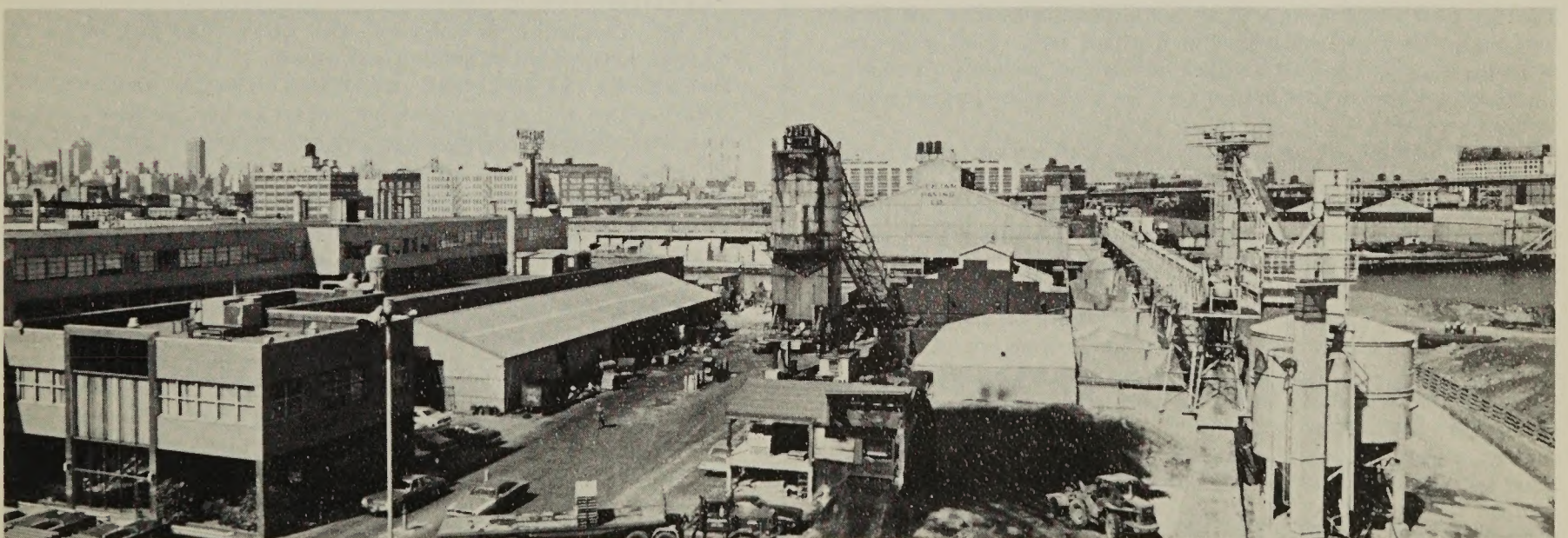
Clearly, there are many facets of asphalt paving and repair not touched on here. Our intention is not to pontificate on the countless special paving situations you will encounter, or to sing the praises of our own 80 years of paving experience here in New York, but rather to make it simpler for you to do your job whenever your work involves asphalt in New York City.

Sincerely,


Joseph J. Haggerty, Jr.
President

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Interboro's Greenpoint Plant — three minutes from the Queens Midtown Tunnel

photo by Susan Wood

Useful Terms

ASPHALT PAVEMENTS AND SURFACE TREATMENTS

AGGREGATE—Any hard, inert, mineral material used for mixing in graduated fragments. It includes sand, gravel, crushed stone, and slag.

AGGREGATE, MACADAM—A coarse aggregate of uniform size usually of crushed stone, slag, or gravel.

ASPHALT BASE COURSE—A foundation course consisting of mineral aggregate, bound together with asphaltic material.

ASPHALT CONCRETE—High quality, thoroughly controlled hot mixture of asphalt cement and well-graded, high quality aggregate, thoroughly compacted into a uniform dense mass typified by Asphalt Institute Type IV Mixes. (See Asphalt Institute Specification Series No. 1.)

ASPHALT EMULSION SLURRY SEAL—A mixture of slow-setting emulsified asphalt, fine aggregate and mineral filler, with water added to produce slurry consistency.

ASPHALT FOG SEAL—A light application of liquid asphalt without mineral aggregate cover. Slow setting asphalt emulsion diluted with water is the preferred type.

ASPHALT INTERMEDIATE COURSE (sometimes called Binder Course)—A course between a base course and an asphalt surface course.

ASPHALT LEVELING COURSE—A course (asphalt aggregate mixture) of variable thickness used to eliminate irregularities in the contour of an existing surface prior to superimposed treatment or construction.

ASPHALT MACADAM—A type of pavement construction using a course, open-graded aggregate that is usually produced by crushing and screening stone, slag or gravel. Such aggregate is called macadam aggregate. Asphalt may be incorporated in macadam construction either by penetrating or by mixing.

ASPHALT OVERLAY—One or more courses of asphalt construction on an existing pavement. The overlay generally includes a leveling course, to correct the contour of the old pavement, followed by uniform course or courses to provide needed thickness. When overlaying rigid-type pavements the overlay should be thick enough to minimize reflection of cracks and joints through the overlay. Greater thickness of overlay may be required depending upon conditions of old pavement and traffic to be served.

ASPHALT PAVEMENTS—Pavements consisting of a surface course of mineral aggregate coated and cemented together with asphalt cement on supporting courses such as asphalt bases; crushed stone, slag, or gravel; or on portland cement concrete, brick, or block pavement. (See Figure II-1.)

ASPHALT PAVEMENT STRUCTURE (sometimes called Flexible Pavement Structure)—Courses of asphalt-aggregate mixtures, plus any non-rigid courses between the asphalt construction and the foundation or subgrade. The term "flexible" sometimes used in connection with asphalt pavements denotes the ability of such a pavement structure to conform to settlement of the foundation.

ASPHALT PRIME COAT—An application of low viscosity liquid asphalt to an absorbent surface. It is used to prepare an untreated base for an asphalt surface. The prime penetrates into the base and plugs the voids, hardens the top and helps bind it to the overlying asphalt course. It also reduces the necessity of maintaining an untreated base course prior to placing the asphalt pavement.

ASPHALT, SAND—A mixture of sand and asphalt cement or liquid asphalt prepared with or without special control of aggregate grading with or without mineral filler. Either mixed-in-place or plant-mix construction may be employed. Sand-asphalt is used in construction of both base and surface courses.

ASPHALT SEAL COAT—A thin asphalt surface treatment used to waterproof and improve the texture of an asphalt wearing surface. Depending on the purpose, seal coats may or may not be covered with aggregate. The main types of seal coats are aggregate seals, fog seals, emulsion slurry seals and sand seals.

ASPHALT, SHEET—A hot mix of asphalt cement with clean angular, graded sand and mineral filler. Its use is ordinarily confined to surface course, usually laid on an intermediate or leveling course.

ASPHALT SOIL STABILIZATION (SOIL TREATMENT)—Treatment of naturally occurring non-plastic or moderately plastic soil with liquid asphalt at normal temperatures. After mixing, aeration

and compaction provide water resistant base and subbase courses of improved load bearing qualities.

ASPHALT, STONE-FILLED SHEET—A sheet asphalt containing up to 25 percent coarse aggregate.

ASPHALT, SURFACE COURSE—The top course of an asphalt pavement, sometimes called asphalt wearing course.

ASPHALT SURFACE TREATMENTS—Applications of asphaltic materials to any type of road or pavement surface, with or without a cover of mineral aggregate, which produce an increase in thickness of less than one inch.

ASPHALT TACK COAT—A very light application of liquid asphalt applied to an existing asphalt or portland cement concrete surface. Asphalt emulsion diluted with water is the preferred type. It is used to insure a bond between the surface being paved and the overlying course.

BASE COURSE—The layer of material immediately beneath the surface or intermediate course. It may be composed of crushed stone, crushed slag, crushed or uncrushed gravel and sand, or combinations of these materials. It also may be bound with asphalt.

COLD-LAID PLANT MIXTURE—Plant mixes which may be spread and compacted at atmospheric temperature.

A DEEP-LIFT ASPHALT PAVEMENT is one in which the asphalt base course is placed in one or more lifts of 4 or more inches compacted thickness.

DEEP-STRENGTH® is a term registered by the Asphalt Institute, with the U.S. Patent Office. The term DEEP-STRENGTH (also called "mark") certifies that the pavement is constructed of asphalt with an asphalt surface on an asphalt base and in accordance with design concepts established by the Institute.

A FULL-DEPTH ASPHALT PAVEMENT is an asphalt pavement in which asphalt mixtures are employed for all courses above the subgrade or improved subgrade. A FULL-DEPTH asphalt pavement is laid directly on the subgrade. (The mathematical symbol T_1 denotes Full-Depth.)

HOT-LAID PLANT MIXTURE—Plant mixes which must be spread and compacted while at an elevated temperature. To dry the aggregate and obtain sufficient fluidity (usually asphalt cement), both must be heated prior to mixing—giving origin to the term "hot mix."

MINERAL DUST—The portion of the fine aggregate passing the No. 200 sieve.

MINERAL FILLER—A finely divided mineral product at least 65 percent of which will pass a No. 200 sieve. Pulverized limestone is the most commonly manufactured filler, although other stone dust, hydrated lime, portland cement, and certain natural deposits of finely divided mineral matter are also used.

MIXED-IN-PLACE (ROAD MIX)—An asphalt course produced by mixing mineral aggregate and liquid asphalt at the road site by means of travel plants, motor graders, drags, or special road-mixing equipment.

PAVEMENT STRUCTURE—All courses of selected material placed on the foundation of subgrade soil, other than any layers or courses constructed in grading operations.

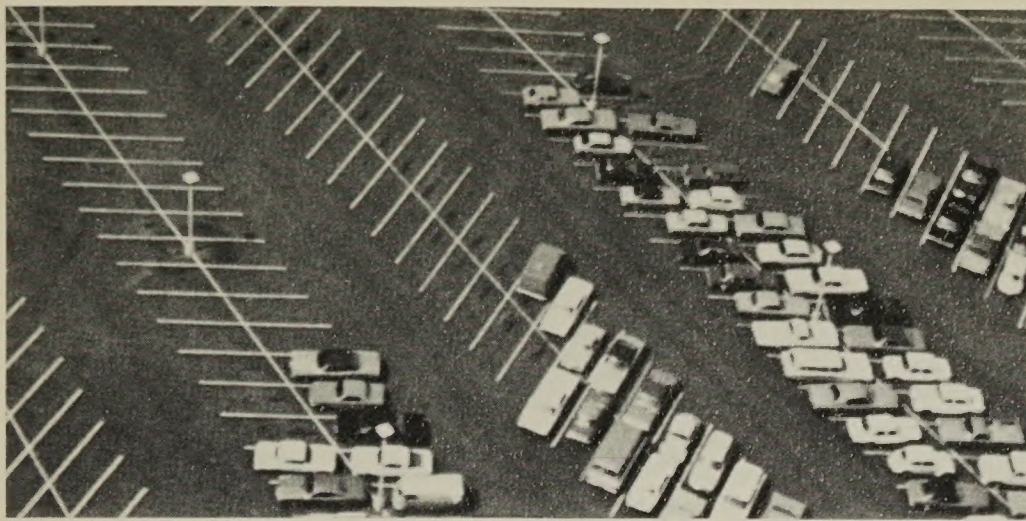
PAVEMENT STRUCTURE COMBINATION-OR COMPOSITE-TYPE—When the asphalt pavement is on an old portland cement concrete pavement, a portland cement concrete base, or other rigid-type base, the pavement structure is referred to as a combination- or composite-type pavement structure.

PLANT MIX—A mixture, produced in an asphalt mixing plant, which consists of mineral aggregate uniformly coated with asphalt cement or liquid asphalt.

SUBBASE—The course in the asphalt pavement structure immediately below the base course is called the subbase course. If the subgrade soil is of adequate quality it may serve as the subbase.

SUBGRADE—The uppermost material placed in embankments or unmoved from cuts in the normal grading of the roadbed. It is the foundation for the asphalt pavement structure. The subgrade soil sometimes is called Basement Soil or Foundation Soil.

SUBGRADE IMPROVED—Any course or courses of select or improved material between the foundation soil and the subbase is usually referred to as the Improved Subgrade. The improved subgrade can be made up of two or more courses of different quality materials.



Parking Lot Construction and Rehabilitation

After your proposed parking lot **plan** is filed, docketed and indexed in your Borough Office of the N.Y. City Building Department (see their names, addresses and phone number on page 8), it is then reviewed by the planning Examiners for conformance with the Building Code, the Zoning Ordinance and other applicable ordinances.

After your plan is approved, the permit is applied for. Here it is important for you to consider the performance record of the paving contractor you select for your job . . . the kind of work he has done in the past, who his other customers are . . . in other words, just how reliable is he?

Interboro recommends 1½ inches of its Asphaltic Concrete (in many cases) not only to save you money on the asphalt itself, but also because the porous nature of this material enables you to avoid the costs of drainage construction (tying in to storm water systems, etc.) AND THIS CONFORMS TO RECENT NEW YORK CITY DEPT. OF BUILDING RULES.

Our asphalt concrete can be laid easily and **quickly** at the parking site. **This is particularly advantageous in congested urban areas**, where a minimum of construction time is of special benefit. Asphaltic concrete is a mixture of asphalt cement and graded aggregate (crushed stone, gravel, sand, mineral dust, etc.). The mixture is made at controlled hot temperatures in our hot-mix asphalt plant that is just three minutes from the Queens Midtown Tunnel in Greenpoint. Then it is hauled by our radio-controlled trucks to your construction site where we spread it and roll it while still hot.

For new construction, the area to be paved should be graded to the required cross-section and brought to a firm, unyielding surface by rolling with a power roller. Areas inaccessible to a power roller should be thoroughly compacted by other acceptable methods.

Rules and Regulations Relating to Public Parking Lots

EXCERPTED from current N.Y. Building Law Manual and recent New York City Dept. of Building Rules and Regulations filed with the City Clerk

Application. These rules apply to the construction, alteration, and use of open parking lots. Open parking lots shall be unobstructed and free of other uses. All driveways and open spaces used for the parking or storage of motor vehicles shall be surfaced with asphalt or equivalent durable, dustless material.

Rules and Regulations (cont'd)

Before a premise located within a C1, C2, C4, C5, C6, C7, C8, M1, M2 and M3 district is occupied for parking or storage of motor vehicles, plans or diagrams and application shall be filed with the **Department of Buildings** by the owner, lessee or operator of such premises and a certificate of occupancy obtained from the Department. Application shall be made on forms furnished by the Department of Buildings. **(Names, addresses and phone numbers of the right people for you to contact on page 8.)**

All such premises now operated as parking or storage lots under temporary approvals based upon variations granted by the Board of Standards and Appeals must be approved by the Department of Buildings on or before the expiration date of such approval; an applicant desiring to continue the use of such premise may continue to operate under the conditions imposed by the Board at the time the last variance was granted, unless otherwise permitted by the Commissioner.

An application for a parking lot shall be accompanied by a **plan** showing: (a) dimensions of the plot and its location in relation to adjoining streets; (b) any structure existing or to be erected on the plot; (c) the relative elevations of the parking area, curbs and adjoining yards or courts; (d) the nature of the walls of adjoining structures, if any i.e., whether masonry, frame, metal, etc.; (e) retaining walls to be built; (f) retaining walls and open spaces, if any, on adjoining premises; (g) existing curb cuts and fences. The applicant shall also submit such other information as may be requested by the Commissioner.

Many of our customers have asked us for "standard" specifications on parking lots, playgrounds and so forth. However these change a lot and vary with special situations, despite those sample specs the big oil companies and asphalt industry associations issue—which are often on the high side as to "required" asphalt depths.

So phone us, or another reputable paving contractor active in the City, to find out what is **really** required for your specific job. **However, we shortly will begin sending you our quarterly Newsletters. These will include various N.Y. State Bureau of Materials formulae as well as suggested specifications for various types of projects.**

Curb Cuts

For the purpose of these regulations, a curb cut is defined as the total length of cut curb including splays.

For frontages of 100 feet or less on a street, the amount of cut curb shall not exceed 60% of the frontage of the lot. No single curb cut shall exceed 30 feet in length and there shall not be more than two curb cuts on any street frontage of 100 feet or less. The minimum distance between two curb cuts shall be 5 feet.

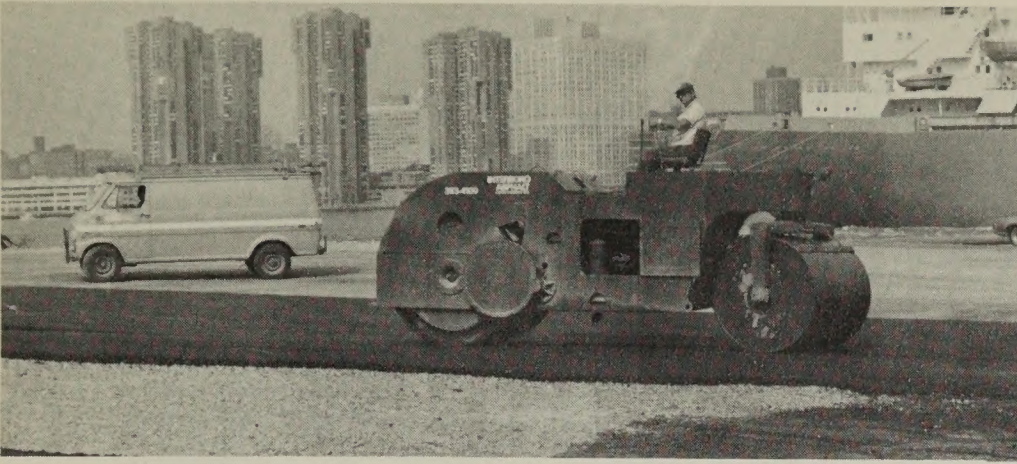
For additional frontage over 100 feet on a street, there may be an additional curb cut for each 50 feet of frontage.

No curb cut shall commence within 8 feet of the side lot lines except that on lots with frontages of 50 feet or less on a street or on corner lots, the curb cut may commence 2½ feet from the side lot lines.

Notwithstanding any computation based on percentage of frontage indicating a lesser amount, no curb cut shall be less than 10 feet.

Construction of cut curbs and sidewalks shall comply with the **regulations of the Department of Highways.**

No certificate of occupancy shall be issued for a parking lot for which a drop curb permit has not been issued.



Enclosures, Openings and Bumpers

The premises shall have an enclosure on all interior lot lines and on street lines consisting of a substantial woven wire fence, iron picket fence, or masonry wall. A wood fence or railing may be acceptable at the discretion of the Commissioner in sparsely settled areas or outlying sections of the City. All enclosures shall be substantial and at least 4 feet high but may be omitted in cases where masonry walls of adjoining buildings abut the parking space or where they would restrict the efficient operation of the parking space. **Such fences shall be installed in a permanent manner.**

Openings in enclosures shall be restricted to vehicular entrances and exits on the street frontages. The width of a vehicular entrance and exit shall be equal to the length of the curb cut [exclusive of splays.] **plus 8 feet on each side or 46 feet. There shall be at least 10 feet of fence between each such opening.**

There shall be a substantial tire bumper of masonry, steel or timber placed near all interior lot lines to protect every structure abutting the parking lot. Where yards, courts or other open spaces abut and are lower than the parking area, the bumper shall be so secured and so situated as to prevent any vehicle from running over to such lower yard, court or other open space.

Tire bumpers shall be situated not less than 4 feet from adjacent property lines when vehicles are parked perpendicular to such adjacent property lines.

Bumpers shall be erected in such manner that they will be permanently attached to the ground.

Tire bumpers may be eliminated when an alternate means of protection such as a guard rail or other substantial barrier will prevent any part of a vehicle from extending across a property line.

The entrance and exit driveways between the curb line and the parking lot shall be paved in accordance with specifications of the Department of Highways. The width of the paved driveway shall be the width of the **opening in the enclosure.**

Drainage

Where the surface paving of an open parking lot is **NONPOROUS**, such lot must be drained to dry wells or a storm water system. However, an asphaltic concrete surface, not to exceed 1½ in. in thickness after compaction, shall be considered a **POROUS** surface since such surface will pass an amount of water equivalent to ½ in. of rainfall per hr. and no drainage to dry wells or a storm water system is required in this case.

Parking lots shall be graded to conform approximately to the elevation of the abutting sidewalks and properties and maintained so that no drainage will flow into abutting sidewalks and adjoining properties. Grade separation between the parking lot and abutting sidewalks and properties may be established if masonry retaining walls approved by the Commissioner are installed. When the surface of the parking lot is impervious to water, suitable means shall be provided to dispose of drainage as required by the Administrative Code.

Parking lots shall be surfaced with asphalt or other suitable material and compacted with a suitable binder to prevent the release of dust.

An asphalt concrete surface not to exceed 1½ inches in thickness after compaction shall be considered a porous surface provided such surface will pass water equivalent to ½ inch of rainfall per hour. The Commissioner of Buildings may require suitable tests to be submitted of the materials used.

Accessory Uses

Each parking lot shall be allowed to erect a temporary shelter for the use of the attendant. No attendant's shelter shall exceed 100 sq. ft. in area. A shelter of wood construction shall be at least 4 feet no inches from **any other wood frame structure**. A shelter erected under the provisions of this section shall not be used for the sale of merchandise.

NOTE—Before any business is conducted on any premises coming within the purview of these regulations, the person conducting or maintaining the business shall obtain a license from the Commissioner of Licenses as required by Section B32-251.0 of the Administrative Code.

The People to Talk with About Parking Lot Permits (The Building Dept.)

BRONX

Deputy Borough Supt. Ernest Cocolicchio
1932 Arthur Ave. Rm. 506
Bronx, N.Y. 10457 583-5520 x 20
Chief Engineer H. Soto
1932 Arthur Ave. Rm. 505
Bronx, N.Y. 583-5520 x 27

QUEENS

Deputy Borough Supt. George Sakona
126-06 Queens Blvd. Rm. 401
Kew Gardens 11415 520-3413
Chief Engineer Irving Levy
(same address) 520-3421

RICHMOND

Deputy Borough Supt. David Sobel
Boro Hall 390-5178
Staten Island 10301 (Rm 200)
Chief Engineer Henry Nissen
(same address.) 390-5185

MANHATTAN

Deputy Borough Supt. I. Greenhouse
Municipal Building Rm. 2017
New York, N.Y. 10017 566-2388

BROOKLYN

(Acting) Deputy Borough Supt. Joseph Minde
Municipal Bldg. Rm. 815
210 Joralemon St.
Brooklyn, N.Y. 11201 643-3074
Chief Engineer Pon T. Wu
(same address) 643-3076

Sample Asphalt Parking Area Proposal from a Paving Contractor

We propose to furnish labor, materials and equipment to perform the following at your location:

Description of work:

- A-1 Areas to be paved to be excavated to sub-grade. All shrubbery in this area to be removed from site.
- 2 Fill is to be installed in center area as per plans.
- 3 A 4" thickness of stone screening to be installed in all areas and properly compacted.
- 4 A 2" thickness of asphaltic concrete to be installed and rolled to a true surface.
- 5 Approx. total area 4668 S.Y.
FOR A SUM OF ----- \$

Other Provisions:

Stone screenings to be placed in dirt areas - 2" asphalt to be installed over the above yardage.

All materials to be fine asphaltic concrete conforming to New York specifications for type 1 mixtures which we have found to be ideally suited for this type of work.



Sidewalks Are Streets

As you may know, any work you may have to do within New York City involving sidewalks in any way, if it exceeds 25 sq. ft. (even if it is only a temporary cut) means you are dealing with the Department of Highways. As far as New York building law is concerned, SIDEWALKS ARE STREETS.

Also, no material shall be delivered or removed by truck or other similar motorized equipment across a sidewalk **where there is no drop curb**, without first obtaining a permit for "crossing sidewalk" from the Department of Highways.

See Dept. of Traffic Rules and Regulations.

Accordingly, we have listed below for your convenience the people in the City Highway Department (by borough) whom you must work with in order to obtain the required permit:

The People to Talk with About Sidewalk Permits (The Highway Dept.)

BRONX

Vito Campo
67 Metropolitan Oval
2nd Floor
Bronx, N.Y. 10462 931-3388

QUEENS

George Hawrysko
120-55 Queens Blvd.
Queens Boro Hall
Kew Gardens, N.Y. 11424
520-3223

RICHMOND

Al Gerhard
Room # 25
Richmond Boro Hall
Staten Island, N.Y. 390-5152

MANHATTAN

Tom Harding
Manhattan Municipal Bldg.
Room 1828
New York, N.Y. 10007 566-2006

BROOKLYN

Gerald O'Donnell
Brooklyn Municipal Bldg.
210 Jerusalem St.
Brooklyn, N.Y. 11201 643-7804



Playground Surfacing

Pavement is, of course, not the immediate requirement for all playgrounds. Where it is, however, the following outline guide may help to shape the planning of those responsible.

Asphalt surface treatment, penetration macadam, and hot and cold mix surfacings have been used for playgrounds. For most situations a foundation thickness of from four to six inches will be ample. Properly graded, good quality crushed stone, slag, and gravel all make excellent bases and drain readily because of their porous nature.

Foundations also may be constructed by stabilizing suitable natural soils with asphaltic products. Except for surface treatment, a surface course thickness of from 1½ to 2 inches is desirable, from the standpoint of durability. The surface texture as a rule should be fine grained.

Proprietary products have been developed and widely accepted using an emulsified asphalt base combined with selected pigments and fillers for squeegee application on asphalt concrete. These materials develop a tight seal with no loose material remaining. They permit easy cleaning and maintenance, and develop a smooth, non-skid surface.

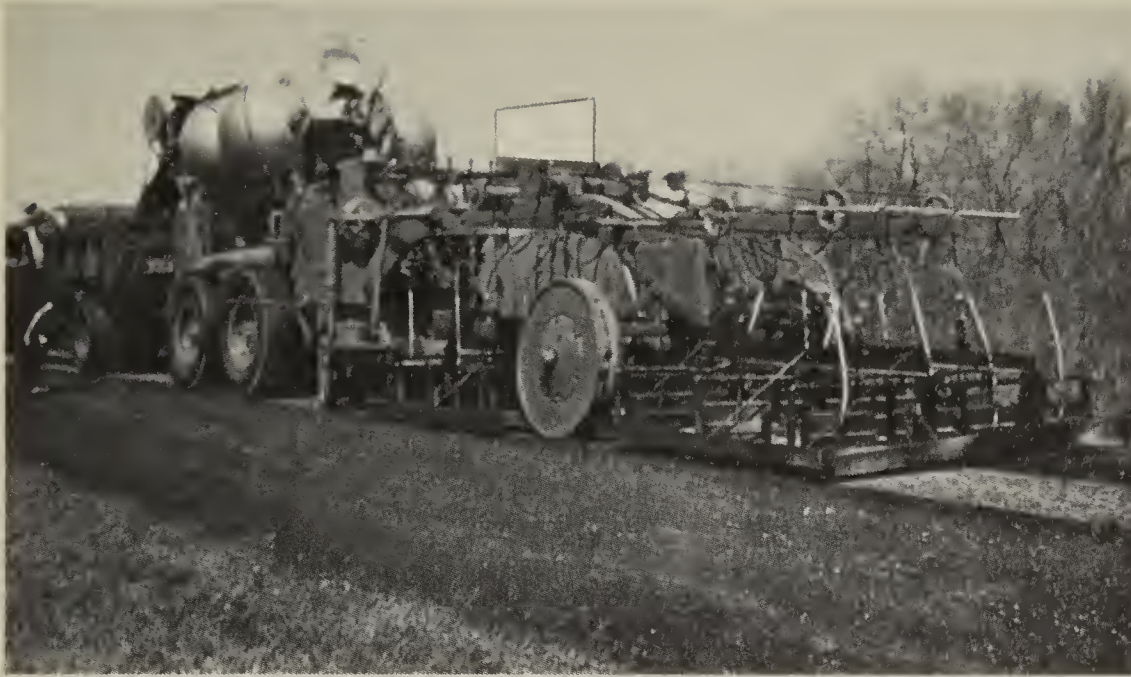
Sample Playground Area Proposal from a Paving Contractor

Paving contractor to furnish labor, materials and equipment to perform the following at your site:

- 1 All depressed areas to receive a levelling course of fine asphaltic concrete to bring same to the level of the adjacent areas.
- 2 A tack coat of liquid asphalt to be applied to the entire surface to assure proper bond to the existing surface.
- 3 A 1½" compacted thickness of fine asphaltic concrete to be installed and rolled to a true surface.

Other Provisions:

All material to be plant mix asphaltic concrete conforming to Parks Department specifications.



Surface Removal

Asphalt: The Heater-Planer

Today's materials, specifications and construction methods produce asphaltic pavements which can be very durable. Over a period of time weathering will oxidize some pavements, causing them to become hard and brittle. Soon there after, shrinkage cracks can develop.

Pavement failure, to be sure, results from many causes; but one thing is certain: Once started, pavement deterioration increases at an accelerated rate and unless action is taken, complete reconstruction becomes inevitable.

Although the first asphalt heater-planer was built many years ago, planing has recently begun to see the light of its potential. More and more, engineers are turning to the asphalt-planer to obtain the desired grade prior to repaving, and also to reclaim disappearing curbs.

Sound heater-planing produces over 15 million BTU's of penetrating heat along with over 1,200 pounds of down pressure per square inch of blade. The machines are built on modified Caterpillar graders which, together with the heat and down pressure, enable them to work at speeds of 50 feet a minute, removing between a quarter and one-half inch of asphalt. There is a direct relationship between BTU's, forward speed, down pressure and heat-penetration. The planed surface has a mosaic appearance which clearly shows the sheared aggregate still held firmly in place.

The use of the planer corrects pavement distortions such as grooving, rutting, corrugations and shoving. When the distress is caused by base movement, complete reconstruction of the base is the only final and thoroughly satisfactory corrective measure. Pending this, the distortion should be leveled and a new surface added in order to strengthen the pavement. Cutting off the high spots with a planer instead of filling in the low ones with additional mix eliminates the chance of new distortions being created by "after-compaction."

When the distress is in the pavement itself, it is probably caused by one of the following: Excess asphalt, improper aggregate graduation or shape, inadequate compaction, lack of binder or the presence of moisture. Planing the surface and adding a thin recap where needed will provide immediate and economical relief.

Concrete: The Grinder

(This equipment can sometimes be economically employed on asphalt)

The feature of this type equipment involves a heavy rotating cutting drum studded with renewable carbide-tipped teeth that chew up concrete surfaces. There are a variety of these type machines on the market, all with different features, and constantly being improved. Their value has been shown in highway and street work, bridges and airports.

Seal Coats

Properly designed and constructed off street paved areas almost never wear out from use by traffic. Pavement problems are usually caused by surface deterioration from weathering, oxidation and damage from petroleum solvents.

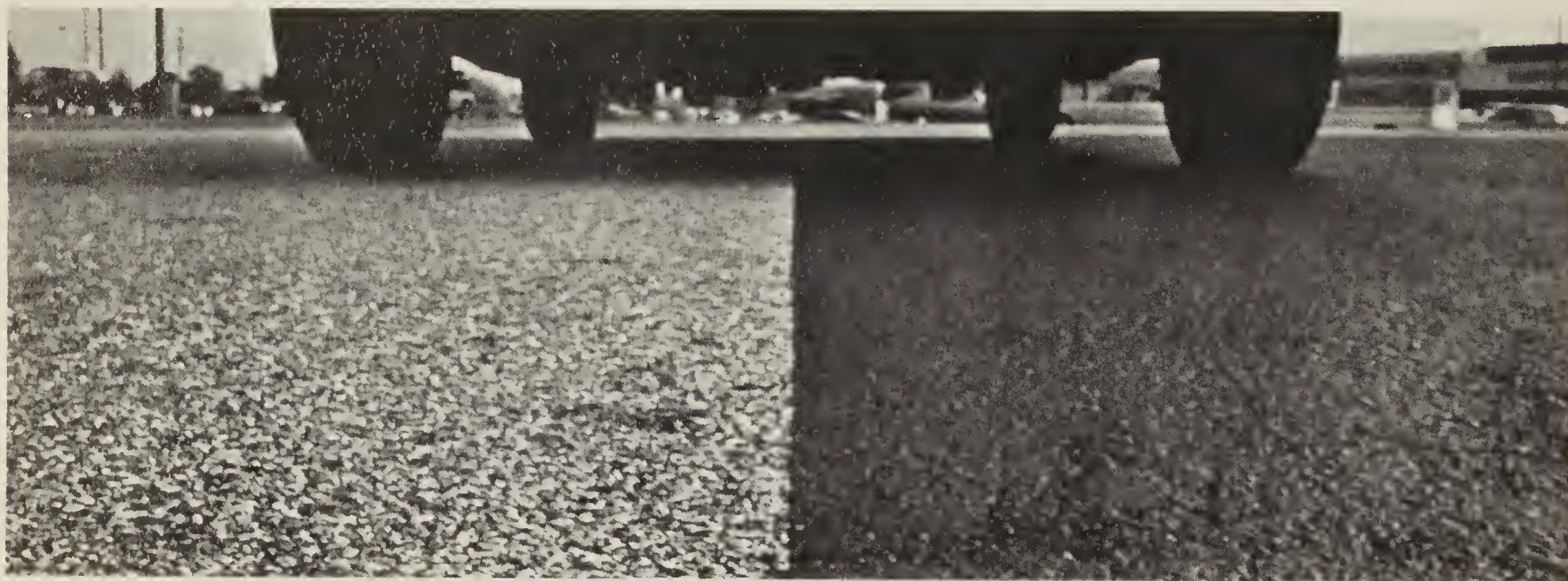
Left unprotected, pavement can lose its flexibility and become brittle from oxidation and weathering. After years of use the fine aggregate ravel from the surface and the texture becomes rough. Cracks can develop and allow water to penetrate to the base making costly repairs necessary. As the surface oxidizes it grays out and petroleum dropped on the surface gives the parking lot a dirty appearance and can cause localized pavement failures.

Seal Coats are designed to help *protect pavements* from surface deterioration and provide a *clean black appearance at a minimum cost*—ideal products for preventative pavement maintenance. They have been specially developed from coal tar to help extend the life of asphalt pavement by protecting it from moisture, weather and damage from petroleum products.

The coal tar base in a seal coat provides protection by firmly bonding to the pavement surface to effectively prevent the softening effects of oils and solvents.

Seal Coating also helps prevent moisture penetration. If the pavement surface is left unprotected, surface moisture can enter the asphalt mix and weaken the underlying base structure leading to costly repairs. Damage occurs even faster during periods of freeze-thaw cycling.

Air penetration and sunlight can combine to cause destructive surface oxidation. A seal coat forms a barrier between the pavement and the weather; its coal tar base protecting the asphalt surface from the effects of oxidation — dry gray pavement, loose sand and stone, surface cracking and deterioration.



Seal coats are a blend of emulsified high temperature coal tar and selected mineral fillers developed for use as a long lasting protective coating for asphalt pavement. They are also available in a rubberized grade, using the same high quality blend of emulsified coal tar and fillers as the nonrubberized grade, but with elastomers added for greater flexibility.

There is a Federal Specification, R-P-355d, which calls for a product that is *easily applied*, has a *fast drying* rate, and *cures to a continuous, uniform film*. Tests require the product to resist jet fuel, gasoline and oils; resist water; resist heat, yet have a high bonding strength and be flexible over a wide temperature range. There is another specially formulated coal tar emulsion, combined with a select angular mineral filler, that fills minor surface voids and provides a smooth, uniformly jet black, skid and solvent resistant surface and is designed especially to protect asphalt pavements from damage caused by petroleum drippings and deterioration due to oxidation from sunlight, water and moisture. **Note:** For inclined ramps, service roadways and rough pavements where either increased traction or void filling characteristics are desired, clean sand should be added to your Seal Coat prior to application.



Interboro men laying down a slurry seal on the lower deck of the George Washington Bridge.

Slurry Seal

For certain resurfacing work, a seal coating of emulsified asphalt, water, fine aggregate and mineral filler mixed prior to application will prove to be significantly less expensive (although not as good or long lasting) as asphalt resurfacing construction.

Slurry seal is often an ideal maintenance program for cemetery roads, airports and, in certain circumstances, highways and roads. Depending upon traffic intensity and paving contractor capability, slurry seal resurfacing generally endures well for up to three years.

The aggregate blend consists of a mineral filler, natural clean washed sand and crushed stone free from clay, silt or other objectionable materials. The aggregate blend should meet the following gradation requirements:

Sieve Size	Percentage Passing
Passing No. 4 mesh	- 100
Passing No. 8	75 - 100
Passing No. 16	55 - 85
Passing No. 30	35 - 65
Passing No. 50	20 - 45
Passing No. 100	10 - 25
Passing No. 200	5 - 15

The aggregate should have a sand equivalent of not less than 40.

Mineral filler consists of Portland Cement Type I.

Emulsified Asphalt used in the mix should meet the requirements of the Asphalt Institute Specification SS-1-h.

Water shall be potable and free from harmful soluble salts.

Aggregate conforming to the gradation limits above is mixed with 20% to 25% Emulsified Asphalt and water to a slurry consistency.

QUANTITIES FOR SLURRY MIXTURE

Emulsified Asphalt - The quantity of asphalt emulsion consists of 50 to 60 gallons per ton of aggregate.

Aggregate - The quantity of fine aggregate for slurry seal coating is from 5 to 7 pounds per square yard. In addition, 1/2 to 1 bag of Portland Cement Type I shall be added per cubic yard of aggregate.

Water - The water used in the mixture will vary in quantity depending upon the moisture content of the aggregate. The total quantity of water should be that which produces the most fluid consistency possible without causing segregation.

MIXING

The mixing cycle should be only sufficient to produce uniform coating. The aggregate, water and emulsified asphalt should be combined in slurry mix trucks in the following order — aggregate, water and then the asphalt emulsion.

Equipment

Power Sweepers, Water Flushing Trucks and Air Compressor are needed for cleaning the old pavement. Aggregate Batchers weigh the exact quantity of aggregate into the mixer truck. Addition of emulsified asphalt and water is carefully controlled by weight or volume from suitable batching tanks.

Mixers for preparation of asphalt emulsion slurry seal can be a Young Slurry Machine as manufactured by the Young Company, Waco, Texas, or its equivalent. A chute with a controlled gate is provided to feed the slurry into the spreader box.

The spreader Box may incorporate numerous features, but consists primarily of a rectangular frame of traffic lane width with a squeegee across the box about three-fourths of the way back from the front, adjustable for thickness of application and crown of the pavements. The squeegee on the spreader box is neoprene rubber belting or similar material $\frac{1}{2}$ inch thick, 6" to 8" wide across the width of the box, preferably with 4" of free rubber for adequate flexibility, and anchored to an adjustable frame. The front and sides of the box is lined with $\frac{1}{4}$ " thick belting to prevent slurry leakage.

Auxiliary equipment such as hand squeegees and a carpet drag should be provided and used as needed.

Preparation of Old Surfaces

All surfaces to be slurry seal coated must be thoroughly cleaned of all dust, dirt, vegetable growth, and debris with rotary brooms and blowing the surface with compressed air. In certain areas, the use of water jets may be required to remove coating of clay, or dirt. After the cleaning and immediately prior to the application of a tack coat, the pavement should be dampened with a fine spray of water at a minimum of 125 pounds pressure by means of a water spray bar attached to the distributor truck.

TACK COAT

Tack coat should be applied to all existing pavement surfaces to insure a thorough bond between the slurry seal and the old surface. A tack coat of emulsified asphalt diluted with water in the ratio of one part emulsion to three parts water is applied to the surface area to be sealed by a pressure distributor at the rate of 0.05 to 0.10 gallon of diluted emulsion per square yard. This tack coat is applied under high pressure (125) pounds minimum through cone nozzles to insure complete and uniform coverage. Work should be planned so that areas tack coated will be slurry sealed same day. All traffic not essential to the work should be kept off the tack coat.

Application of Slurry Seal

The mixture should be spread through a squeegee drag-box, attached to and pulled by a transit mixer while the mixture is being discharged into the box. The drag-box permits the emulsified asphalt aggregate mixture to flow freely into surface voids. Attaching the box to the transit mix truck permits application of the mixture in a straight line. The action of the squeegee and the drag-box should deposit a layer of slurry not exceeding $\frac{1}{8}$ inch above the existing pavement surface except for minor depressions or dips.

IMPORTANT:

The slurry should be applied only when the atmospheric temperature is above 45° and below 90° and when weather forecasts do not predict precipitation during the next eight hours. Applications over-diluted and damaged by heavy precipitation have to be cleaned of all unbonded abrasive material and recoated.

Interboro

We have the men. We have the mobility.

And we have, most of all, the versatility to successfully undertake those complex kinds of jobs involving intense traffic, where our special equipment must be in and out *quickly*.

Different installations, we have found, call for different asphalt mixes. And since we have our own plant, we are able to design asphalt mixes precisely suitable for specific situations.

INTERBORO'S INTO EVERY BOROUGH

Yes, in the five boroughs . . . five days a week, fifty-two weeks a year . . . you'll find the men and machines of Interboro Asphalt on the job.

Maybe the job is a parking lot or a playground, a tennis court or a shopping center. The campus of a college. The curb of a sidewalk.

Maybe it's a mammoth construction job. A minor maintenance job.

Maybe it's a job for a small property owner, an architect, a contractor, an engineer. Maybe it's for giants like Con Ed or the Triborough Bridge and Tunnel Authority.

But there's no maybe about this:

When Interboro Asphalt does the job, it's done promptly, efficiently, economically.

When you call on all the experience we've been accumulating since we started in the metropolitan area of New York (way back in 1889) as the Sicilian Asphalt Paving Co. We changed our name as we expanded our operations throughout the city, to Interboro Surface Co. And finally we changed it to Interboro Asphalt Paving Co.

Our plant is the only one of its kind in New York that's open twelve months a year.

Our excavation, concrete and asphalt crews—from 30 to 50 of them at any one time—are on the streets of every borough at every time of the day. We have the manpower to do the job quickly—with minimal inconvenience to the public—and **no matter how small or how large your job is.**

Our trucks are all radio-equipped.

Our superintendents—one for each borough—can be contacted immediately through our radio dispatchers.

And our engineers stand ready to give you a free consultation before you undertake to construct or repair any paved area. They're true professionals. And whether you're an engineer yourself, or an architect, a contractor or a property owner—you'll find they talk your language.

**OUR CUSTOMERS
WALK ALL OVER US**

**INTERBORO
ASPHALT**